

# Lunar Health Monitor (LHM)

## *A wearable sensor suite for continuous physiological monitoring*

Orbital Research, Inc., has developed a low-profile, wearable sensor suite for monitoring astronaut health in both intravehicular and extravehicular activities. The Lunar Health Monitor measures respiration, body temperature, electrocardiogram (EKG) heart rate, and other cardiac functions. Orbital Research's dry recording electrode is central to the innovation and can be incorporated into garments, eliminating the need for conductive pastes, adhesives, or gels. The patented dry recording electrode has been approved by the U.S. Food and Drug Administration. The LHM is easily worn under flight gear or with civilian clothing, making the system completely versatile for applications where continuous physiological monitoring is needed.

During Phase II, Orbital Research developed a second-generation LHM that allows sensor customization for specific monitoring applications and anatomical constraints. Evaluations included graded exercise tests, lunar mission task simulations, functional battery tests, and resting measures. The LHM represents the successful integration of sensors into a wearable platform to capture long-duration and ambulatory physiological markers.

### Applications

#### NASA

- ▶ Astronaut health and exercise monitoring
- ▶ Microgravity countermeasure assessment

#### Commercial

- ▶ Monitoring of emergency first responders
- ▶ Cardiac arrhythmia and mapping studies
- ▶ Monitoring during exercise and fitness activities
- ▶ Military health monitoring
- ▶ Patient rehabilitation and recovery tracking
- ▶ Pharmaceutical research and development



Orbital Research, Inc. photos

### Phase II Objectives

- ▶ Complete design of the second-generation LHM
- ▶ Assemble a fully functioning prototype
- ▶ Demonstrate the performance of the prototype in a clinically and functionally relevant environment and protocol
- ▶ Complete a demonstration in a NASA test facility
- ▶ Review demonstration results and modify design accordingly

### Benefits

- ▶ Provides continuous and comprehensive biomedical monitoring
- ▶ Eliminates skin irritation associated with extended exposure to conventional electrode adhesives
- ▶ Is comfortable to wear and quickly donned and doffed

### Firm Contact

Orbital Research, Inc.  
 Frederick J. Lisy  
[lisy@orbitalresearch.com](mailto:lisy@orbitalresearch.com)  
 4415 Euclid Avenue, Suite 500  
 Cleveland, OH 44103-3733  
 Phone: 216-649-0399

**Proposal Number: 06-2 X14.02-9443**